REMARKS

Claims 1-10 are all the claims pending in the application. Claims 1-3 stand rejected for anticipation by Wakim, claims 5-8 stand rejected as unpatentable over Wakim, and claims 9 and 10 stand rejected as unpatentable over Martin in view of Wakim. These rejections are all respectfully traversed.

Initially, it is noted that Wakim is assigned to Alcatel USA Sourcing, LP, a wholly-owned subsidiary of Alcatel, the assignee of the present application. The subject matter of Wakim which would otherwise be prior art to the presently claimed invention and the presently claimed were commonly owned at the time the invention as made, and Wakim is not available as prior art under 102(e)/103(a). In any event, the present invention clearly is neither shown nor suggested in Wakim, for the reasons discussed below.

The background and contribution of the present invention will be discussed again briefly, to give a better understanding of what is claimed and a better understanding of how Wakim relates to what is claimed.

As pointed out at page 1 of the present application, SDH and SONET are two different synchronous digital transport networks, in which useful information is carried in “containers.” The containers contain an overhead section known as "path overhead" together with which they are referred to as virtual containers. The virtual containers (referred to as “multiplex units”) are themselves multiplexed in a frame referred to as a synchronous transport module, with the virtual containers arbitrarily positioned in the payload section of the transport modules and addressed by a pointer in the overhead section of the transport modules. Thus, a synchronous transport module is a frame-structured synchronous multiplex signal with payload and overhead sections,

and in the payload section carries multiplex units (virtual containers) which are multiplexed into the payload section in accordance with a multiplex hierarchy specified but the ITU-T.

The overhead section of the synchronous transport module contains a pointer to the largest multiplex unit contained in the payload section and also includes one section referred to as RSOH (regenerator section overhead) and one section referred to as MSOH (multiplex section overhead). These contain items of check- and control information which has conventionally been used when a SDH- or SONET-based sub-network interfaces with a transport network of a public operator. This typically involves terminating the overhead of each transport module from a subnetwork and generating new overhead for the transport network, and vice versa when transporting in an opposite direction. Having many different such interfaces with different subnetworks can lead to problems in consistency as to how the check and control information is used/mapped. Thus, a stated goal of the present invention is to provide a multiplexer which allows frames (e.g., STM frames) with a payload section and an overhead section to be transmitted without having to access their overhead sections.

An illustrative example in the specification is described with reference to Fig. 1. There are two synchronous digital sub-networks SN1 and SN2 each carrying frame-structured synchronous multiplex signals, in this example they are synchronous transport modules of the STM-4 type. A goal is to allow the sub-networks SN1 and SN2 to exchange their STM-4 transport modules between them via the public transport network WAN without accessing and terminating the overhead section. According to the invention, as described at the bottom of page 7 of the specification, this is done in the following steps:

1. Form multiplex units of the VC-4 type in the transport network and multiple of these new VC-4 multiplex units are concatenated with one another to form a virtual concatenation VC-4-nv.
2. Pack the STM frames to be transmitted (e.g., the STM-4 transport modules from subnetwork SN1) into the payload sections of the multiplex units formed in step (1).
3. Embed the newly-formed multiplex units in the payload sections of newly-formed transport modules and transmit these on the transport network WAN.

The end result is to have transport modules in the transport network WAN which have a payload section and an overhead section, and the payload section will carry a plurality of multiplex units, with the multiplex units being formed of a concatenation of newly-formed multiplex units, and the multiplex units carrying as payload the STM frames (e.g., the STM-4 transport modules from sub-network SN1) to be transmitted.

With reference to claim 1:

> A method of transmitting, via a synchronous digital transport network, **a frame-structured synchronous multiplex signal, composed of frames having a payload section and an overhead section, wherein the payload section comprises multiplex units that are multiplexed according to a multiplex hierarchy**, wherein the method comprises transmitting a frame of the frame-structured synchronous multiplex signal to be transmitted, including its unchanged overhead section, as payload in a concatenation of newly formed multiplex units.

The bold-faced text describes the frame structure of a conventional SDH or SONET signal. The method of the present invention is to send this type of signal via a synchronous digital network (e.g., WAN in Fig. 1 of the present application). The distinctive part of the invention defined in claim 1 is that a frame of the signal described in the bold-faced text is transmitted as payload "in a concatenation of newly-formed multiple units."

The examiner relies on Wakim et al to teach the transmission of a frame structured, synchronous multiplex signal. But frame structured synchronous multiplex signals are already acknowledged as prior art in the present application. What is further significant is that claim 1 of the present application defines the payload section of a frame of the frame structured signal as including multiplex units that are multiplexed according to a multiplex hierarchy. And the claim states that an entire such frame, including its unchanged overhead section, is sent as payload in a concatenation of newly formed multiplex units.

The problem Wakim is concerned with is how to transmit multiplex units of the SONET type over an SDH network. The section overhead of a frame is never transmitted unchanged. Same is true for STM-N in SDN. Wakim only teaches a way of how to map the SONET payload SPE into SDH frames, since there is the larger multiplex unit VC-4. All are not frames and require a transport frame with section overhead for transmission.

Concatenation is different from multiplexing. Multiplexing means mixing lower capacity channels into higher capacity channels for parallel transport. Concatenation means linking multiplex units of same origin and destination to provide a larger transmission capacity.

The Examiner reads the frame in claim 1 onto Wakim's SPE and argues that Wakim teaches to transmit the SPE without terminating the path overhead. The SPE, however, is no frame. It has no framing and cannot be transmitted without an STS-N/STM-N frame. The SPE is simply a name in SONET for the payload section of an STS-1 frame. The fact that path overhead is not terminated is implicit since path overhead is always transported from end to end, but what is in fact terminated is the section overhead of a frame (STS-N or STM-N).

In Wakim, either the SPE is mapped into a STS-N frame, or is multiplexed via TUG-3 into VC-4 and then mapped into STM-N. Both options are already known from G.707, fig. 6-1. Moreover, it is improper from the Examiner to read the term frame first on the SPE and then on the STM-4 in figure 2 of Wakim. Wakim does not teach to pack a STS-N or an STM-N into an STM-N and Wakim does not teach to pack frames into a concatenation of newly formed multiplex units (VC-4).

Wakim only shows multiplex units in one frame. The SPE is not a frame, it always needs a frame around to be transported. A frame is the structure that can be transported on the network but the SPE is only the payload section that carries the tributary signals (possibly multiplexed in smaller multiplex entities as recited in the claim by the words multiplex hierarchy). Certainly, a SPE contains overhead as well, but this is path overhead, i.e., overhead that is by its nature transparent from end to end (this is the definition of a path).

There is nothing like the idea to encapsulate a perfectly suitable transport structure inside another transport structure using a concatenation of multiplex units. It is absolutely not obvious to encaspulate a frame that could be transported as such through the network in another frame. Moreover, the term concatenation is in synchronous networks such as SDH or SONET a well defined technical term that does not leave room for interpretation to a skilled reader. Wakim does not teach a concatenation of multiplex units at all. I do not understand what the Exmainer reads onto the concatenation of multiplex units but there is nothing like this in Wakim. There is only an SPE, which is a payload entity that is by definition transparent from end to end mapped into a frame for transport.

Wakim et al relates to transitioning in either direction between SONET and SDH, and Wakim et al does describe that the synchronous path should not be terminated. But lack of termination of the synchronous path is not synonymous with loading an entire frame as payload in a concatenation of newly-formed multiplex units.

Further, while Fig. 2 and its description at the bottom of column 6 describe the signal DS3 as being mapped to an SDH-based signal 210 such that the overhead portion 214 will contain information regarding the origination point of the payload portion, and the signal 210 is then included as the payload in the signal 216, DS3 is not a frame-structured signal as defined in claim 1. A DS3 signal is not a synchronous but a plesiochronous client signal, which contains for sure overhead and payload but which does not carry any multiplex units multiplexed according to a multiplex hierarchy.

A DS3 is transported in a single multiplex unit VC-3, which was termed for historical reasons in SONET an SPE (= VC-3 in SDH, see col. 7, line 15/20 of Wakim), which in turn fits into an STS-1, i.e. a transport frame of SONET.

In contrast, claim 1 describes the kind of frame-structured client signal which is transported. Neither the SPE nor the DS-3 from Wakim reads on this. Claim 1 further describes the signal structure of the signal that transports the client signal and how this transport is achieved, i.e. using concatenation of multiplex units. Wakim does not show anything comparable to that.

Wakim describes how to interconnect SONET and (ETSI-)SDH. This is not achieved by transporting the SONET signal in a concatenation of SDH containers. Conversely, the SONET

STS- 1 is terminated and the multiplex unit (SPE = VC-3, see col. 7, line 15/20 of Wakim) carrying the DS-3 client signal is multiplexed into a new SDH frame (STM1).

In figure 2, a SONET frame STS-1 is shown as payload section 210 plus transport overhead 218. 210 is the SPE, which contains a container C-3 plus path overhead (i.e. a special overhead which belongs to the particular C-3 for the entire path from end to end which is by definition not terminated on the path).

According to the language of claim 1 of the present case, this STS-1 should be mapped into a concatenation of more than one VCs in SDH. Conversely, according to Wakim, the transport overhead 218 is terminated and the VC3 (which corresponds to the SPE) with its plesiochonous DS3 signal inside receives a new pointer 318 (termed TU pointer) and is is multiplexed with two other TU-3 carrying client signals from other sources into a VC-4 for the transport in an STM1 transport frame of SDH.

What Wakim teaches about concatenation is that the SONET frame can already carry a concatenation of SPE instead of a single SPE and that this concatenation is then mapped into an new SDH frame (ie the existing SONET concatenation is mapped into a new SDH frame not the entire SONET frame into a new SDH concatenation) - see col. 8 lines 19-35.

In short, Wakim teaches to take the multipelx unit (or a concatenation of multiplex units) from a SONET frame and transport it in an SDH frame, while the invention claims to transport the entire SDH (or SONET) frame inside a new concatenation of SDH (or SONET) multiplex units.

The remaining rejections fail for the same reasons as dicussed above with respect to claim 1.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

An extension of time is requested, the required fee being separately authorized through the Electronic Filing System (EFS). The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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